Michael T. Davis WLPCS Pre-Calculus	1.6, 1.7 & 1.8 Practice Quiz Version 2 October 24, 2017

Name: Solutions / Answers

Unit 1.8 (the only material from unit 1.8 included in Wednesday's quiz is the graphing of parabola

1. Graph the parabola with quadratic equation $f(x)=7-x^2$

$f(x) = -x^2 + 0x + 7$

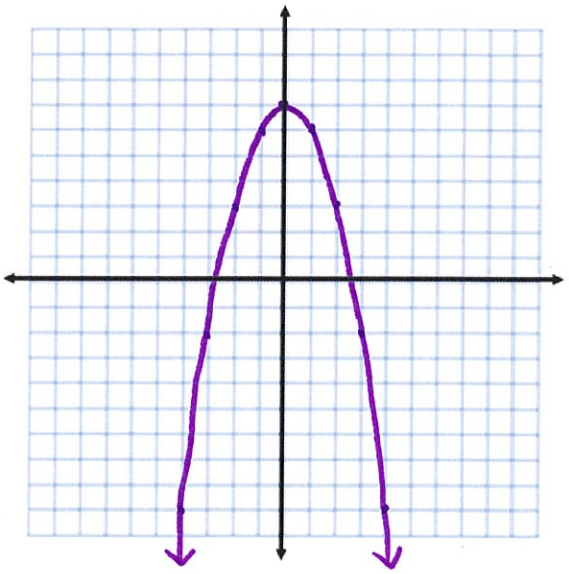
$a=-1 \quad b=0 \quad c=7$

axis $x = \frac{-0}{2(-1)} = 0$

$f(0) = 7-(0)^2 = 7$

$V(0,7)$

Pattern : 1, 3, 5, 7, 9 but down



2. Graph the parabola with quadratic equation $f(x)=2x^2-12x+11$

axis $x = \frac{-(-12)}{2(2)} = \frac{12}{4} = 3$

$f(3) = 2(3)^2 - 12(3) + 11$

$= 2(9) - 36 + 11$

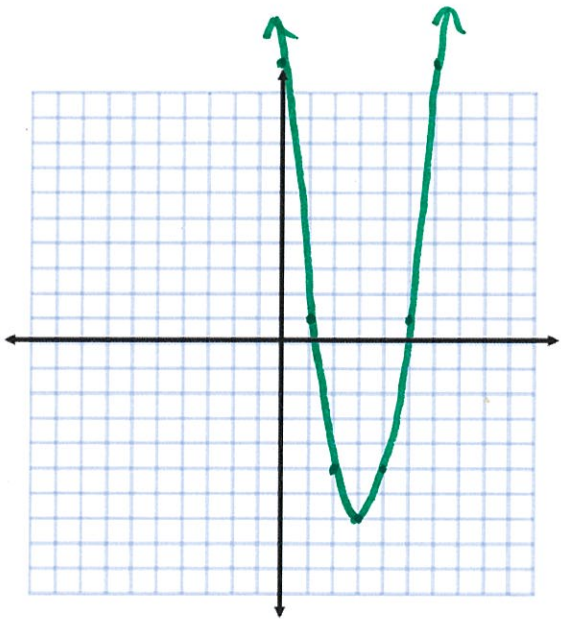
$= 18 - 36 + 11$

$= -18 + 11$

$= -7$

$V(3,-7)$

Pattern: 2, 6, 10, ...

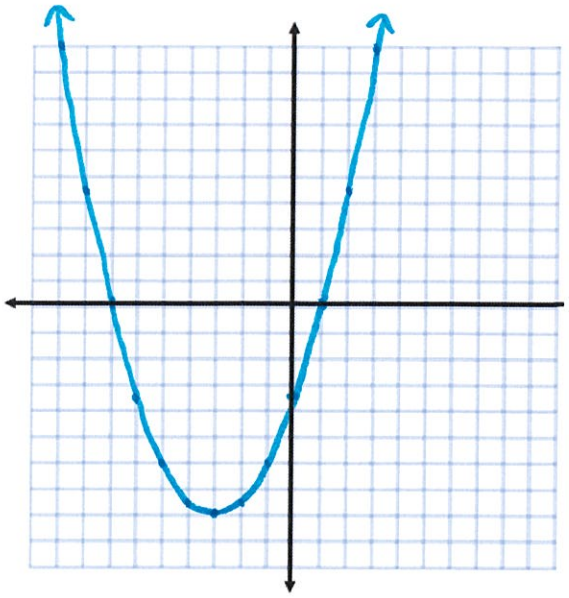


3. Graph the parabola with quadratic equation

$$f(x)=\frac{1}{2}(x+3)^2-8$$

V(-3, -8)

Pattern: $\frac{1}{2}, 1\frac{1}{2}, 2\frac{1}{2}, 3\frac{1}{2}, 4\frac{1}{2}, 5\frac{1}{2}$



4. Graph the parabola with quadratic equation

$$f(x)=-(x-1)(x-7)$$

x-intercepts are (1, 0) & (7, 0)

axis is at midpoint of x-intercepts

axis $x=\frac{1+7}{2}=\frac{8}{2}=4$

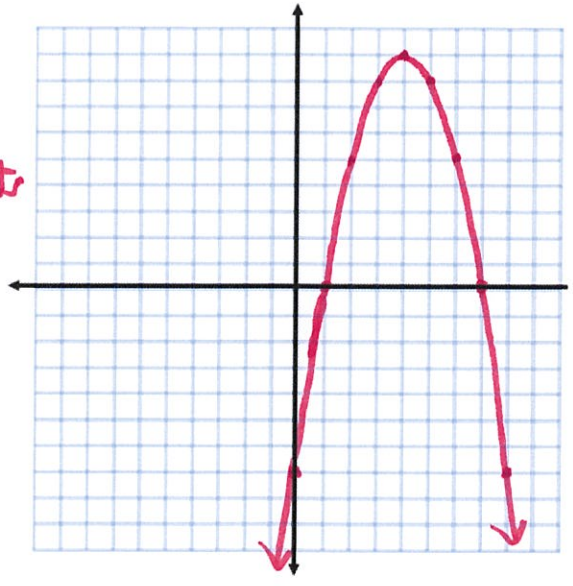
$f(4)=-(4-1)(4-7)$

$=-(3)(-3)$

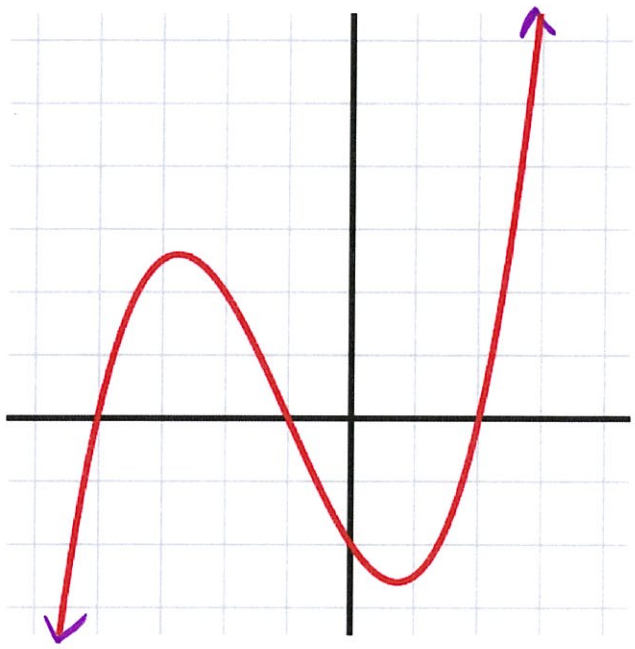
$=9$

V(4, 9)

Pattern: 1, 3, 5, 7, ... but down



5. Shown is the graph of $y = g(x)$



Domain: $(-\infty, \infty)$	**Range:** $(-\infty, \infty)$
Increasing on what interval? $(-\infty, -2.75) \cup (0.75, \infty)$	**Decreasing on what interval?** $(-2.75, 0.75)$
Maximum Value: $y =$ None	**Minimum Value:** $y =$ None
Concave up: $(-1, \infty)$	**Concave Down:** $(-\infty, -1)$
$g(x) > 0$ $(-4, -1) \cup (2, \infty)$	$g(x) \leq 0$ $(-\infty, -4] \cup [-1, 2]$
Coordinates of the x-intercept(s): $(x, y) =$ $(-4, 0)$; $(-1, 0)$; $(2, 0)$	**Coordinates of the y-intercept:** $(x, y) =$ $(0, -2)$
End Behavior as $x \to -\infty$ $y \to -\infty$	**End Behavior as** $x \to \infty$ $y \to \infty$

Unit 1.8 Material

Given the two functions $f(x)=6-x$ and $g(x)=3x+10$, evaluate each expression:

1. $(f-g)(x)$ or $f(x)-g(x)$

$6-x-(3x+10)$

$6-x-3x-10$

$-4x-4$

2. $\left(\frac{g}{f}\right)(2)$ or $\frac{g(2)}{f(2)}$ $= \frac{3(2)+10}{6-2} = \frac{6+10}{4} = \frac{16}{4} = 4$

3. $(f\cdot g)(x)$ or $f(x)\cdot g(x)$ $= (6-x)(3x+10)$

$= 18x+60-3x^2-10x$

$= -3x^2+8x+60$

4. $(g\circ f)(x)$ or $g(f(x))$ $= g(6-x) = 3(6-x)+10$

$= 18-3x+10$

$= 28-3x$

Given the two functions $f(x)=2x^2-6$ and $g(x)=\sqrt{x+5}$, Then evaluate each expression:

5. $(f\circ g)(x)$ or $f(g(x))$ $= f(\sqrt{x+5}) = 2(\sqrt{x+5})^2-6$
$= 2(x+5)-6$
$= 2x+10-6$
$= 2x+4$

6. $(g\circ f)(x)$ or $g(f(x))$ $= g(2x^2-6) = \sqrt{2x^2-6+5}$
$= \sqrt{2x^2-1}$

7. $(f\circ g)(11)$ or $f(g(11))$ $= f(\sqrt{11+5}) = f(\sqrt{16})$
$= f(4)$
$= 2(4)^2-6$
$= 2(16)-6$
$= 32-6$
$= 26$

8. $(g\circ f)(-5)$ or $g(f(-5))$ $= g(2(-5)^2-6) = g(2(25)-6)$
$= g(50-6)$
$= g(44)$
$= \sqrt{44+5}$
$= \sqrt{49}$
$= 7$